We claim:

1. A process for the preparation of a compound of Formula I:

$$\begin{array}{c|c} R_1 & R_3 & O \\ \hline & S & OH \\ \hline & S & O-R_4 \\ \hline & O & O-R_4 \\ \end{array}$$

Formula I

wherein:

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 $R_1$  and  $R_2$  are independently selected from H, straight chain alkyl of 1 to 4 carbon atoms, halogen and alkoxy of 1 to 4 carbon atoms;

R<sub>3</sub> is straight chain alkyl of 1 to 4 carbon atoms;

 $R_4$  is straight chain alkyl of 1 to 4 carbon atoms and branched chain alkyl of 3 to 4 carbon atoms;

R<sub>5</sub> is straight chain alkyl of 1 to 4 carbon atoms;

comprising:

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a) treating a nitrile of the formula:

with a reducing agent followed by acid hydrolysis to obtain an aldehyde of the formula:

$$R_1$$
  $R_3$   $R_3$   $R_4$   $R_5$   $R_7$ 

b) reacting the aldehyde (step a) with alkali metal cyanide in the presence of an alkyl amine of the formula  $R_5NH_2$  to obtain nitrile of the formula:

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c) hydrolyzing the nitrile (step b) with an alkali metal hydroxide to give an amide of the formula:

$$R_1$$
  $R_3$   $R_3$   $NH_2$   $R_2$   $NH$ 

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d) reacting the amide (step c) with an organic carbonate, of the formula  $O[CO_2R_4]_2$  wherein each  $R_4$  is taken independently in the presence of dimethylaminopyridine (DMAP) to obtain a triblocked amide of the formula:

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e) hydrolyzing triblocked amide (step d) with an alkali metal hydroxide to give racemic blocked amine of the formula:

f) reacting racemic blocked amine (step e) with a resolving base (NH<sub>2</sub>-resolving base) to obtain a resolved blocked amine salt of the formula:

$$R_1$$
 $R_3$ 
 $R_3$ 
 $R_3$ 
 $R_3$ 
 $R_3$ 
 $R_3$ 
 $R_3$ 
 $R_4$ 
 $R_5$ 
 $R_4$ 
 $R_5$ 
 $R_4$ 

and

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g) treating the resolved blocked amine salt with aqueous alkali metal hydroxide and acidifying with acid to give a compound of Formula I:

Formula I

- 2. The process according to claim 1, wherein the reducing agent in step a is tin chloride/hydrochloric acid, lithium aluminum hydride, or diisobutylaluminum hydride (DIBAL-H).
- 20 3. The process according to claim 2, wherein the reducing agent is disobutylaluminum hydride (DIBAL-H).
  - 4. The process according to claim 1, wherein the alkali metal cyanide in step b is sodium cyanide, potassium cyanide or lithium cyanide.

- 5. The process according to claim 4, wherein the alkali metal cyanide is potassium cyanide.
- 5 6. The process according to claim 1, wherein the alkylamine is methylamine.
  - 7. The process according to claim 1, wherein the alkali metal hydroxide in step c is sodium hydroxide, potassium hydroxide or lithium hydroxide.
- 10 8. The process according to claim 7, wherein the alkali metal hydroxide is lithium hydroxide.
  - 9. The process according to claim 7, optionally including the oxidizing agent hydrogen peroxide in step c.
  - 10. The process according to claim 1, wherein the organic carbonate in step d is t-butyl dicarbonate.
- 11. The process according to claim 1, step d, optionally including the organic baseN,N-diisopropylethylamine in step d.
  - 12. The process according to claim 1 wherein the alkali metal hydroxide in step e is sodium hydroxide, potassium hydroxide or lithium hydroxide.
- 13. The process according to claim 12, wherein the alkali metal hydroxide is sodium hydroxide.
  - 14. The process according to claim 1 wherein the resolving base in step f is (S)-(-)- $\alpha$ -methylbenzylamine, (S)-(-)- $\alpha$ -methyl-4-nitro-benzylamine, (1R,2S)-(-)-norephedrin, or (1S,2R)-(+)-norephedrin.
    - 15. The process according to claim 14, wherein the resolving base is (S)-( $\alpha$ )-methylbenzylamine or (S)-(-)-methyl-4-nitro-benzylamine.

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- 16. The process according to claim 15, wherein the resolving base is (S)-(-)- $\alpha$ -methylbenzylamine.
- 5 17. The process according to claim 1, wherein the alkali metal hydroxide in step g is sodium hydroxide, potassium hydroxide, lithium hydroxide or sodium carbonate.
  - 18. The process according to claim 17, wherein the alkali metal hydroxide is sodium hydroxide.
- 19. The process according to claim 1, wherein the acids hydrochloric, sulfuric or citric acid in step g adjust the pH to 6 or less.
  - 20. The process according to claim 19, wherein the pH is adjusted to 3 to 6.
    - 21. The process according to claim 20, wherein the pH is adjusted to 4 to 6.
    - 22. The process according to claim 21 wherein the pH is adjusted to 5 to 6 with citric acid.
    - 23. A process for the preparation of a compound of the formula:

$$R_1$$
  $R_3$   $R_3$   $O$   $OH$   $S$   $R_2$   $R_5$   $O-R$ 

## Formula I

wherein:

 $R_1$  and  $R_2$  are independently selected from H, straight chain alkyl of 1 to 4 carbon atoms, halogen and alkoxy of 1 to 4 carbon atoms;

30 R<sub>3</sub> is straight chain alkyl of 1 to 4 carbon atoms;

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 $R_4$  is straight chain alkyl of 1 to 4 carbon atoms and branched chain alkyl of 3 to 4 carbon atoms;

5 R<sub>5</sub> is straight chain alkyl of 1 to 4 carbon atoms;

comprising:

10 a) reacting a racemic blocked amine of the formula:

$$R_1$$
 $R_3$ 
 $R_3$ 
 $O$ 
 $O$ 
 $R_4$ 

with a resolving base (NH<sub>2</sub>-resolving base) to obtain a resolved blocked amine salt of the formula:

$$R_1$$
  $R_3$   $R_3$   $O$   $O$  + NH<sub>3</sub>-resolving base  $R_2$   $R_5$   $O$   $R_4$ 

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and

b) treating the resolved blocked amine salt with aqueous alkali metal hydroxide and acidifying with acid to give a compound of Formula I

$$\begin{array}{c|c} R_1 & R_3 & R_3 & O \\ \hline & S & O \\ \hline & S & O \\ \hline & R_2 & R_5 & O \\ \hline & O & O \\ \end{array}$$

Formula I

- 5 24. The process according to claim 23 wherein the resolving base in step a is (S)-(-)- $\alpha$ -methylbenzylamine, (S)-(-)- $\alpha$ -methyl-4-nitro-benzylamine, (1R,2S)-(-)-norephedrin, or (1S,2R)-(+)-norephedrin.
- 25. The process according to claim 24, wherein the resolving base is (S)-(-)- $\alpha$ methylbenzylamine or (S)-(-)- $\alpha$ -methyl-4-nitro-benzylamine.
  - 26. The process according to claim 25, wherein the resolving base is (S)-(-)- $\alpha$ -methylbenzylamine.
- 15 27. The process according to claim 23, wherein the alkali metal hydroxide in step b is sodium hydroxide, potassium hydroxide, lithium hydroxide or sodium carbonate.
  - 28. The process according to claim 27, wherein the alkali metal hydroxide is sodium hydroxide.
  - 29. The process according to claim 23, wherein the acids hydrochloric, sulfuric or citric acid in step h adjust the pH to 6 or less.
  - 30. The process according to claim 29, wherein the pH is adjusted to 3 to 6.
  - 31. The process according to claim 30, wherein the pH is adjusted to 4 to 6.
  - 32. The process according to claim 31 wherein the pH is adjusted to 5 to 6 with citric acid.

33. A process for the preparation of a compound of Formula I:

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Formula I

wherein:

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 $R_1$  and  $R_2$  are independently selected from H, straight chain alkyl of 1 to 4 carbon atoms, halogen and alkoxy of 1 to 4 carbon atoms;

R<sub>3</sub> is straight chain alkyl of 1 to 4 carbon atoms;

 $R_4$  is straight chain alkyl of 1 to 4 carbon atoms and branched chain alkyl of 3 to 4 carbon atoms;

R<sub>5</sub> is straight chain alkyl of 1 to 4 carbon atoms;

comprising:

a) deblocking substituted amine of the formula:

with acid to give nitrile of the formula:

b) hydrolyzing the nitrile (step a) in the presence of an alkali metal hydroxide to obtain an amide of the formula:

10 c) reacting the amide (step b) with an organic carbonate of the formula O[CO<sub>2</sub>R<sub>4</sub>]<sub>2</sub> wherein R<sub>4</sub> is taken independently in the presence of dimethylaminopyridine (DMAP) to give triblocked amide of the formula:

15 and;

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d) hydrolyzing triblocked amide (step c) with an alkali metal hydroxide and acidifying with acid to obtain a compound of Formula I:

Formula I

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- 34. The process according to claim 33 step a wherein the acid is methanolic HCI.
- 35. The process according to claim 33 step b wherein the alkali metal hydroxide in step b is sodium hydroxide, potassium hydroxide or lithium hydroxide.

36. The process according to claim 35 wherein the alkali metal hydroxide is lithium hydroxide.

- 37. The process according to claim 36 including an optionally added oxidizing agent which is hydrogen peroxide.
  - 38. The process according to claim 33, wherein the organic carbonate in step c is t-butyl dicarbonate.
- 15 39. The process according to claim 38 optionally including an organic base in step c which is N,N-diisopropylethylamine.
  - 40. The process according to claim 33 wherein the alkali metal hydroxide in step d is sodium hydroxide, potassium hydroxide or lithium hydroxide.

41. The process according to claim 40, wherein the alkali metal hydroxide is sodium hydroxide.

- 42. The process according to claim 33, step d wherein the acids hydrochloric, sulfuric or citric acid in step d adjust the pH to 6 or less.
- 43. The process according to claim 42, wherein the pH is adjusted to 3 to 6.
- 44. The process according to claim 43, wherein the pH is adjusted to 4 to 6.  $\,$
- 45. The process according to claim 44 wherein the pH is adjusted to 5 to 6 with citric acid.

46. A process for the preparation of an aldehyde of the formula:

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5 wherein:

 $R_1$  and  $R_2$  are independently selected from H, straight chain alkyl of 1 to 4 carbon atoms, halogen and alkoxy of 1 to 4 carbon atoms;

10 R<sub>3</sub> is straight chain alkyl of 1 to 4 carbon atoms;

by reacting a substituted oxirane of the formula:

$$R_1$$
 $R_3$ 
 $R_3$ 

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with tris(pentafluorophenyl) borane to afford an aldehyde of the formula

$$R_1$$
  $R_3$   $R_3$   $R_3$   $R_4$   $R_5$ 

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47. A process for the preparation of a carboxylic acid of the formula:

wherein:

5 A is selected from the group

$$R_1$$
  $R_3$   $R_3$   $R_3$   $R_3$   $R_4$   $R_5$   $R_5$   $R_5$   $R_5$   $R_6$   $R_7$   $R_8$   $R_8$   $R_9$   $R_9$ 

R<sub>1</sub> and R<sub>2</sub> are independently selected from H, straight chain alkyl of 1 to 4 carbon atoms, halogen and alkoxy of 1 to 4 carbon atoms;

R<sub>3</sub> is straight chain alkyl of 1 to 4 carbon atoms;

Rs is straight chain alkyl of 1 to 4 carbon atoms;

comprising:

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a) coupling an amino acid of the formula selected from the group:

with an ester of the formula:

$$H_2N$$
 $N$ 
 $E$ 
 $COOR_4$ 

R<sub>4</sub> is straight chain alkyl of 1 to 4 carbon atoms and branched chain alkyl of 3 to 4 carbon atoms;

in the presence of a coupling agent and an organic base to obtain an ester of the formula:

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b) hydrolyzing the ester of step a) with an alkali metal hydroxide and acidifying with acid affords a carboxylic acid of the formula:

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48. A process according to claim 47 wherein the coupling agent is selected from the group N,N'-dicyclohexylcarbodiimide plus 1-hydroxybenzotriazole, benzotriazol-1-yloxytris(dimethylamino)phosphonium hexafluorophosphate (BOP-reagent), N,N'bis[2-oxo-3-oxazolidinyl]phosphorodiamidic chloride (BOB CI), diphenylphosphinyl chloride (DPP-CI), diethoxyphosphoryl cyanide, 2-chloro-1-methylpyridinium iodide, phenyldichlorophosphate plus imidazole, 2-(1H-benzotriazole-1-yl)-1,1,3,3-tetramethyluronium tetrafluoroborate, 2-(1H-

benzotriazole-1-yl)-1,1,3,3-tetramethyluronium hexafluorophosphate, bromo-tris-pyrrolidino-phosphonium hexafluorophosphate and benzotriazole-1-yl-oxy-tris-pyrrolidino-phosphonium hexafluorophosphate in the presence of N,N-diisopropylethylamine.

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- 49. A process according to claim 48 wherein the coupling agent is benzotriazole-1-yl-oxy-tris-pyrrolidino-phosphonium hexafluorophosphate.
- 50. A process according to claim 47 wherein the organic base is N,Ndiisopropylethylamine, N-methylmorpholine, N-methylpyrrolidine, triethylamine, 4dimethylaminopyridine, 2,6-di-tert-butyl-4-methylpyridine or pyridine.
  - 51. The process according to claim 47 wherein the aminoacid is

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52. The process according to claim 47 wherein the aminoacid is

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- 53. The process according to claim 47 wherein the aminoacid is
  - R<sub>1</sub> R<sub>3</sub> R<sub>3</sub> OH NH NH
- 54. A process according to claim 50 wherein the organic base is N,N-diisopropylethylamine.

- 55. A process according to claim 47 wherein the alkali metal hydroxide is sodium hydroxide, potassium hydroxide or lithium hydroxide.
- 5 56. A process according to claim 55 wherein the alkali metal hydroxide is lithium hydroxide.
  - 57. A process according to claim 47 wherein the acid is selected from sulfuric, hydrochloric or citric.

58. A process for the preparation of a carboxylic acid of the formula:

wherein:

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 $R_1$  and  $R_2$  are independently selected from H, straight chain alkyl of 1 to 4 carbon atoms, halogen and alkoxy of 1 to 4 carbon atoms;

R<sub>3</sub> is straight chain alkyl of 1 to 4 carbon atoms;

R<sub>4</sub> is straight chain alkyl of 1 to 4 carbon atoms and branched chain alkyl of 3 to 4 carbon atoms;

R<sub>5</sub> is straight chain alkyl of 1 to 3 carbon atoms;

comprising:

a) coupling an amino acid of the formula:

with an ester of the formula:

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$$H_2N$$
 $O$ 
 $N$ 
 $COOR_4$ 

in the presence of a coupling agent and an organic base to obtain an ester of the formula:

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b) hydrolyzing the ester of step a) with an alkali metal hydroxide and acidifying with acid to obtain a carboxylic acid of the formula:

$$R_1$$
 $R_3$ 
 $R_3$ 
 $R_4$ 
 $R_5$ 
 $R_5$ 

59. A process according to claim 58 wherein the coupling agent is selected from the group N,N'-dicyclohexylcarbodiimide plus 1-hydroxybenzotriazole, benzotriazol-1-yloxytris(dimethylamino)phosphonium hexafluorophosphate (BOP-reagent), N,N'bis[2-oxo-3-oxazolidinyl]phosphorodiamidic chloride (BOB CI),

diphenylphosphinyl chloride (DPP-CI), diethoxyphosphoryl cyanide, 2-chloro-1-methylpyridinium iodide, phenyldichlorophosphate plus imidazole, 2-(1H-benzotriazole-1-yl)-1,1,3,3-tetramethyluronium tetrafluoroborate, 2-(1H-benzotriazole-1-yl)-1,1,3,3-tetramethyluronium hexafluorophosphate, bromo-tris-pyrrolidino-phosphonium hexafluorophosphate and benzotriazole-1-yl-oxy-tris-pyrrolidino-phosphonium hexafluorophosphate in the presence of N,N-diisopropylethylamine.

- 60. A process according to claim 59 wherein the coupling agent is benzotriazole-1-10 yl-oxy-tris-pyrrolidino-phosphonium hexafluorophosphate.
  - 61. A process according to claim 58 wherein the organic base is N,N-diisopropylethylamine, N-methylmorpholine, N-methylpyrrolidine, triethylamine, 4-dimethylaminopyridine, 2,6-di-tert-butyl-4-methylpyridine or pyridine.

62. A process according to claim 61 wherein the organic base is N,N-diisopropylethylamine.

- 63. A process according to claim 58 wherein the alkali metal hydroxide is sodium hydroxide, potassium hydroxide or lithium hydroxide.
  - 64. A process according to claim 63 wherein the alkali metal hydroxide is lithium hydroxide.
- 25 65. A process for the preparation of an aldehyde of the formula:

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wherein:

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 $R_1$  and  $R_2$  are independently selected from H, straight chain alkyl of 1 to 4 carbon atoms, halogen and alkoxy of 1 to 4 carbon atoms;

R<sub>3</sub> is straight chain alkyl of 1 to 4 carbon atoms;

 $R_4$  is straight chain alkyl of 1 to 4 carbon atoms and branched chain alkyl of 3 to 4 carbon atoms;

R<sub>5</sub> is straight chain alkyl of 1 to 4 carbon atoms;

comprising:

a) alkylating benzylnitrile of the formula:

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with an alkylating agent R<sub>3</sub>LG, in the presence of a strong base, to obtain a nitrile of the formula:

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and

b) reducing a nitrile of step a with a reducing agent to give an aldehyde of the formula:

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- 66. A process according to claim 65 wherein the strong base according to claim step a is potassium *tert*-butoxide (<sup>t</sup>BuOK), sodium *tert*-butoxide (<sup>t</sup>BuONa), lithium *tert*-butoxide (<sup>t</sup>BuOLi), sodium hydride, potassium hydride, sodium hydroxide, or lithium diisopropylamide.
- 67. A process according to claim 66 wherein the strong base is potassium *tert*-butoxide (<sup>t</sup>BuOK).
- 10 68. A process according to claim 65 step a wherein the alkylating agent R₃LG is methyl iodide or methyl bromide or optionally methyl bromide in the presence of sodium iodide or tetrabutyl ammonium iodide.
- 69. A process according to claim 65 step b wherein the reducing agent is tin chloride/hydrochloric acid, lithium aluminum hydride or diisobutylaluminum hydride (DIBAL-H).
  - 70. A process according to claim 69 wherein the reducing agent is diisobutylaluminum hydride (DIBAL-H).

71. The compound which is 3-methyl-2-(methylamino)-3-phenylbutanenitrile.

- 72. The compound which is  $N,\beta,\beta$ -trimethylphenylalaninamide.
- 73. The compound which is N,β,β-trimethylphenylalanine.
  - 74. The compound which is N-(tert-butoxycarbonyl)-N, $\beta$ , $\beta$ -trimethylphenylalaninamide.
- 75. The compound which is N,N,N-tris(tert-butoxycarbonyl)-N,β,β-trimethylphenylalaninamide.
  - 76. The compound which is N-(tert-butoxycarbonyl)-N, $\beta$ , $\beta$ -trimethylphenylalanine.

- 77. The compound which is (S)-N-(2-methyl-2-phenyl-propylidene)-p-toluene-sulfinamide.
- 5 78. The compound which is (S<sub>S</sub>,2S)-N-(p-toluenesulfinyl)-2-amino-3-methyl-3- phenylbutyronitrile.
  - 79. The compound which is (S<sub>s</sub>,2R)-N-(p-toluenesulfinyl)-2-amino-3-methyl-3-phenylbutyronitrile.
  - 80. The compound which is (S<sub>s</sub>,2S)-N-(p-toluenesulfinamido-methyl)-3-methyl-3- phenylbutanenitrile.
- 81. The compound which is (2S)-3-methyl-2-(methylamino)-3-phenylbutanenitrile,
  N,β,β-trimethyl-L-phenylalaninamide.
  - 82. The compound which is N-(tert-butoxycarbonyl)-N, $\beta$ , $\beta$ -trimethyl-L-phenylalaninamide.
- 83. The compound which is N,N,N-tris(tert-butoxycarbonyl)-N, $\beta$ , $\beta$ -trimethyl-L-phenylalaninamide.
  - 84. The compound which is salt of N-(tert-butoxycarbonyl)-N, $\beta$ , $\beta$ -trimethyl-L-phenylalanine with (S)-(-)- $\alpha$ -methylbenzylamine (SAMBA).
  - 85. The compound which is salt of N-(tert-butoxycarbonyl)-N, $\beta$ , $\beta$ -trimethyl-D-phenylalanine with (R)-(+)- $\alpha$ -methylbenzylamine (RAMBA).
- 30 86. A process for the preparation of a carboxylic acid of the formula:

$$R_1$$
 $R_3$ 
 $R_3$ 
 $R_3$ 
 $R_4$ 
 $R_5$ 
 $R_5$ 

wherein:

5 R<sub>1</sub> and R<sub>2</sub> are independently selected from H, straight chain alkyl of 1 to 4 carbon atoms, halogen and alkoxy of 1 to 4 carbon atoms;

R<sub>3</sub> is straight chain alkyl of 1 to 4 carbon atoms;

10 R<sub>4</sub> is straight chain alkyl of 1 to 4 carbon atoms and branched chain alkyl of 3 to 4 carbon atoms;

R<sub>5</sub> is straight chain alkyl of 1 to 3 carbon atoms;

- 15 comprising:
  - a) reacting a compound of Formula I:

Formula I

With acid to obtain an amino acid of the formula:

$$R_1$$
 $R_3$ 
 $R_3$ 
 $R_5$ 
 $R_5$ 
 $R_5$ 

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b) coupling an amino acid of step a with an ester of the formula:

$$H_2N$$
 $O$ 
 $N$ 
 $COOR_4$ 

in the presence of a coupling agent and an organic base to obtain an ester of the 5 formula:

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c) hydrolyzing the ester of step b) with an alkali metal hydroxide and acidifying with acid to obtain a carboxylic acid of the formula:

$$\begin{array}{c|c} R_3 & R_3 & O \\ \hline R_1 & R_3 & O \\ \hline R_2 & R_5 & H & O \end{array}$$

- 87. A process according to claim 86 wherein the coupling agent is selected from the group N,N'-dicyclohexylcarbodiimide plus 1-hydroxybenzotriazole, benzotriazol-1yloxytris(dimethylamino)phosphonium hexafluorophosphate (BOP-reagent),
- N,N'bis[2-oxo-3-oxazolidinyl]phosphorodiamidic chloride (BOB CI), 20 diphenylphosphinyl chloride (DPP-CI), diethoxyphosphoryl cyanide, 2-chloro-1methylpyridinium iodide, phenyldichlorophosphate plus imidazole, 2-(1Hbenzotriazole-1-yl)-1,1,3,3-tetramethyluronium tetrafluoroborate, 2-(1Hbenzotriazole-1-yl)-1,1,3,3-tetramethyluronium hexafluorophosphate, bromo-trispyrrolidino-phosphonium hexafluorophosphate and benzotriazole-1-yl-oxy-tris-
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pyrrolidino-phosphonium hexafluorophosphate in the presence of N,N-diisopropylethylamine.

- 88. A process according to claim 87 wherein the coupling agent is benzotriazole-1yl-oxy-tris-pyrrolidino-phosphonium hexafluorophosphate.
  - 89. A process according to claim 86 wherein the organic base is N,N-diisopropylethylamine, N-methylmorpholine, N-methylpyrrolidine, triethylamine, 4-dimethylaminopyridine, 2,6-di-tert-butyl-4-methylpyridine or pyridine.
  - 90. A process according to claim 89 wherein the organic base is N,N-diisopropylethylamine.
- 91. A process according to claim 86 wherein the alkali metal hydroxide is sodium hydroxide, potassium hydroxide or lithium hydroxide.
  - 92. A process according to claim 91 wherein the alkali metal hydroxide is lithium hydroxide.
- 20 93. A process according to claim 86 step a wherein the acid is trifluoroacetic acid.
  - 94. A process for the preparation of a carboxylic acid of the formula:  $q^{-\epsilon_i}$

25 wherein:

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 $R_1$  and  $R_2$  are independently selected from H, straight chain alkyl of 1 to 4 carbon atoms, halogen and alkoxy of 1 to 4 carbon atoms;

30 R<sub>3</sub> is straight chain alkyl of 1 to 4 carbon atoms;

R<sub>4</sub> is straight chain alkyl of 1 to 4 carbon atoms and branched chain alkyl of 3 to 4 carbon atoms;

5 R<sub>5</sub> is straight chain alkyl of 1 to 3 carbon atoms;

comprising:

10 a) coupling a compound of Formula I:

$$R_1$$
  $R_3$   $R_3$   $O$   $OH$   $S$   $O-R_4$ 

Formula I

with an ester of the formula:

$$H_2N$$
 $O$ 
 $N$ 
 $COOR_4$ 

in the presence of a coupling agent and an organic base to obtain an ester of the formula:

b) hydrolyzing the ester of step a) with an alkali metal hydroxide and treating with acid to obtain a carboxylic acid of the formula:

$$R_1$$
 $R_2$ 
 $R_3$ 
 $R_3$ 
 $R_4$ 
 $R_5$ 
 $R_5$ 
 $R_6$ 
 $R_7$ 
 $R_8$ 
 $R_8$ 
 $R_8$ 
 $R_9$ 
 $R_9$ 
 $R_9$ 
 $R_9$ 
 $R_9$ 
 $R_9$ 
 $R_9$ 
 $R_9$ 
 $R_9$ 

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- 95. A process according to claim 94 wherein the coupling agent is selected from the group N,N'-dicyclohexylcarbodiimide plus 1-hydroxybenzotriazole, benzotriazol-1-yloxytris(dimethylamino)phosphonium hexafluorophosphate (BOP-reagent),
- N,N'bis[2-oxo-3-oxazolidinyl]phosphorodiamidic chloride (BOB CI), diphenylphosphinyl chloride (DPP-CI), diethoxyphosphoryl cyanide, 2-chloro-1-methylpyridinium iodide, phenyldichlorophosphate plus imidazole, 2-(1H-benzotriazole-1-yI)-1,1,3,3-tetramethyluronium tetrafluoroborate, 2-(1H-benzotriazole-1-yI)-1,1,3,3-tetramethyluronium hexafluorophosphate, bromo-tris-pyrrolidino-phosphonium hexafluorophosphate and benzotriazole-1-yl-oxy-tris-pyrrolidino-phosphonium hexafluorophosphate in the presence of N,N-diisopropylethylamine.
  - 96. A process according to claim 95 wherein the coupling agent is benzotriazole-1-
- 20 yl-oxy-tris-pyrrolidino-phosphonium hexafluorophosphate.

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97. A process according to claim 94 wherein the organic base is N,N-diisopropylethylamine, N-methylmorpholine, N-methylpyrrolidine, triethylamine, 4-dimethylaminopyridine, 2,6-di-tert-butyl-4-methylpyridine or pyridine.

diisopropylethylamine.

99. A process according to claim 94 wherein the alkali metal hydroxide is sodium hydroxide, potassium hydroxide or lithium hydroxide.

98. A process according to claim 97 wherein the organic base is N,N-

100. A process according to claim 99 wherein the alkali metal hydroxide is lithium hydroxide.

5 101. A process according to claim 94 step a wherein the acid is trifluoroacetic acid.